

Clerk's File Copy

THE MAGNAVOX COMPANY, et al.,

Plaintiff,

vs.

CHICAGO DYNAMIC INDUSTRIES
and SEEBURG CORP.,

Defendants.

)
)
)
) No. 74 C 1030
) and
) 74 C 2510
)
)
)

BEFORE: The Honorable JOHN F. GRADY, Judge.

Monday, January 3, 1977

9:30 o'clock a.m.

FILED

PRESENT:

MR. ANDERSON
MR. WILLIAMS
MR. ALLEGRETTI
MR. BRIODY

MAR 2 - 1977

H. Stuart Cunningham, Clerk
United States District Court

appeared for The Magnavox Company;

MR. GOLDENBERG
MR. RIFKIN

appeared for the Seeburg defendants and
World Wide Distributors.

Ribbens - cross

THE COURT: Good morning.

MR. GOLDENBERG: Good morning.

MR. ANDERSON: Good morning, your Honor.

THE CLERK: 74 C 1030, 74 C 2510, Magnavox v. Chicago Dynamics, case on trial.

WILLIAM BENNETT RIBBENS,
called as a witness by the plaintiff herein, having
been previously sworn and examined, resumed the stand, was
examined and testified further as follows:

THE COURT: Good morning.

THE WITNESS: Good morning.

CROSS EXAMINATION

BY MR. GOLDENBERG:

Q Dr. Ribbens, if you recall, at the close of
trial on Thursday I had asked you a series of questions
about the hit symbol generator in the defendants' devices
as represented by Plaintiff's Exhibit 91-A.

A Yes, that is the Pro Tennis or Paddle Ball. I
have forgotten which.

Q Right, sir, 91-A is the Paddle Ball.

A Okay, I have it.

Q I believe I was asking you about Claim 51 of the
'507 patent.

A If you could wait just a moment, I will turn

Ribbens - cross

to that.

'507 did you say?

Q Yes, sir.

A I have 51.

Q As I said, we had last been inquiring about the hit symbol generating means.

A That is correct.

Q I would now like to inquire about the last element in that Claim 51, "means for imparting a distinct motion to said hit symbol upon coincidence."

I believe it is your testimony that with respect to this Exhibit 91-A, those are the elements you have outlined in the dotted line orange markers, is that correct?

A Yes.

Q Could you tell me what determines the direction of ball bounce from a paddle upon coincidence in the Paddle Ball game as represented by this exhibit, Plaintiff's Exhibit 91-A?

A The horizontal direction or both horizontal and vertical?

Q Let's take the vertical direction first, sir.

A The vertical direction is determined by the pre-set inputs to the 9316 counter, B3..

Q All right, sir. What are those inputs?

A You mean the pin numbers? Pins 3, 4, 5 and 6.

Q Can you tell me what they are in terms of functions or what the player of the game observes when he plays the game?

A Those are two rather different questions.

Q Well, let's take it in terms of what the player observes when he plays the game.

A When the player plays the game, after coincidence he notices that the ball is moving away from his paddle. Its horizontal direction is reversed and its vertical direction is determined by where on the paddle the ball and paddle coincidence took place.

Q Is there anything else that determines the vertical direction in this Paddle Ball game?

A That is such an open-ended question --

Q Let me perhaps make it more specific.

Is the vertical direction of the ball travel after coincidence determined by the positions of the paddles on the field of play?

A No. It is determined by the position of the paddle relative to the ball. There is a set of inputs that comes to this preset input, that comes from the D-type flip-flops, which are clocked -- that is A5A, A5B, and B5A, which are clocked, coming from the

"Hit/Hitting Coincidence Detector".

Q And whether a player's paddle is at the top of the screen or the bottom of the screen doesn't have anything to do with it?

A Doesn't have anything to do with it? No. There will be a set of numbers which are loaded into this counter which are just determined by -- well, that is not a very good question, because it happens that all of these operate by counting, and the position of the paddle is determined in relationship to the vertical and horizontal synchronizing pulses, and the ball is determined in relationship to the vertical and horizontal synchronizing pulses, and it is the difference between the count of the master clock from frame to frame relative to the difference in the count of the preset counters, B3 and A3, which determines the vertical motion of the ball.

Q Can you agree with me that one of the inputs or groups of inputs into this full adder that determines the vertical travel are these inputs to these gates on the left-hand side of the drawing?

A Which components are you referring to?

Q I am referring to A6A, A6B and B6B.

A Those provide the "D" inputs into the D-type Flip-Flops.

Q Now, the inputs to those gates come from the elements at the top, the 7493 units, is that correct?

A I have to stand up to look at this. There isn't quite enough room up here.

Yes. That is correct. They come from the 7493 counters.

Q Now, I see a group of lines running down the left-hand side of the page from the counter, which is designated the "Right Paddle Ht.", which I assume stands for "height".

A Yes.

Q And the "Left Paddle Ht."

A That's correct.

Q So those gates are receiving inputs from both of those counters, aren't they?

A Yes.

Ribbens - cross

Q So wouldn't it be a reasonable conclusion that the state of the count in those counters, that both of those things are affecting the input to the full adder, which determines the vertical ball travel?

A Yes, but one side will have reached terminal count and will have been inhibited, because one player will already have reached coincidence.

Let's say, for example, the left player has reached coincidence and the ball is traveling to the right travel, and we are measuring the coincidence with the right paddle coincidence, and then you will have reached terminal count on the left paddle counter, and you measure only the state of the count of the right paddle counter at coincidence.

Q What do you mean by terminal count, sir?

A Well, the height of the paddle is determined by the number of horizontal lines which occur following the true input -- excuse me -- the true output of, let's say, B9 if we are talking about the left paddle.

Q What inhibits those counters?

A Well --

Q What circuit element, and let me back up for a moment -- what do you mean by inhibit?

A Well, there is an AND-gate, and I can't read

Ribbens - cross

whether it is a B7B or -- well, it must be B7B to be consistent with our numbering, that stops the horizontal synchronizing pulses from entering the counter after the input pin 5 reaches its state. It will be a ground state.

Q So that we might have it, you don't agree that the vertical component of the ball travel after coincidence is determined by the position of both paddles, I take it?

A By the position of both paddles?

Q Yes, sir.

A We have to be really careful. You mean where on the screen it occurs?

Q Yes, sir.

A That the vertical position -- let me have that again, would you please? Would you say it again?

MR. GOLDENBERG: Perhaps the reporter can read it back to you. I would prefer to have the question answered I had asked it.

(Whereupon the record was read by the reporter as requested.)

BY THE WITNESS:

A It is determined by the combined inputs to A6A, A6B, and B6B. One of the sets of inputs will be terminal count as of the point of which that last counter will have terminated counting horizontal lines. The other one will have an input which is determined by the state of the count at which coincidence is reached.

MR. GOLDENBERG: I am sorry. Could you read that back?

A (Read by the reporter.)

BY MR. GOLDENBERG:

Q I am not sure -- is your answer to my question yes or no?

A I think it is no. The question is sufficiently ambiguous that I am not sure what I am answering, and that is why I was trying to paraphrase your question in answering it.

Q Tell me what it is about the question that you don't understand, sir?

A Well, the pre-set inputs to the vertical motion counter are determined by -- we are in agreement they are determined by the 7483 device, which receives its inputs from the D-type flip-flops, which are essentially storage registers which measure the state, the logical state, of A6A, A6B, B6B at the point of coincidence, the last point of coincidence, because the clock input is the output from Hit/Hitting Coincidence.

Q I know, sir, but if you could answer my question, my present question to you is what is it about the basic question that we are dealing with that you don't understand, so that you cannot answer yes or no?

A That is what I'm trying to decide. In other words, I have stated what I believe the vertical motion resulted from and whether the position of the paddle is

at the top or the bottom of the screen, all we are attempting to do is measure the count in the counter 7493, which is being measured at coincidence.

Q I want to complete this so that we might go on to something else.

I take it you cannot answer my question as to whether or not the vertical ball travel is affected by the paddle positions?

MR. ANDERSON: I object. I think that is a new question, and I think he has answered the question also that he originally asked.

THE COURT: Overruled.

BY THE WITNESS:

A The problem with the question is that it depends on which level we are discussing; that is, the set of numbers which are in the 9316 counter depends upon the paddle positions because we are continually counting from horizontal and vertical same. So to that extent, we are operating with a different set of numbers, but vertical motion is determined by the difference in the count in this 9316 counter from one frame to the next.

BY MR. GOLDENBERG:

Q I understand that, sir, and what we are dealing with essentially is what are the inputs to that counter --

A And I believe I have answered that.

Q -- which determines its count?

A I have answered that.

Q I take it you do not agree that one of those sets of input into that counter is information about the vertical position of the paddles on the screen?

MR. ANDERSON: May I, your Honor?

Do you mean specifically both paddles at the same time? I am confused about the question.

BY MR. GOLDENBERG:

Q Both paddles at the same time, sir.

A I want to be careful about this because I don't want to --

Q I want you to be careful, sir.

A I think there is a possibility we are misunderstanding the question still because when you say information concerning the positions of those paddles, that would imply the positions are being measured by counting pulses to generate a time delay following the vertical and horizontal synchronizing pulses. The counters continue to count. That is, the input to the vertical counters, B3 and A3 for the ball or hit spot, are coming from the same source, namely, the horizontal sync.

I think if you look at the input labeled CP on component B3 and A3, it is the same as the input

to the counters A8 and B8, which determine the height of the paddle.

The vertical position of the paddle, however, is being determined by the time delay of the B9 and A9 555 timers. So, you know, I could answer the question on a superficial level that it is independent of the paddle position. In other words, the change in the vertical velocity component depends upon what the count is in this counter, regardless of where the paddle is. In other words, you don't get a different motion off the paddle if the paddle is at the top of the screen or at the bottom of the screen.

Q All right, sir, I think you have answered my question.

Can we agree also that an element determining the vertical direction of the ball travel after coincidence is where the ball hits on the paddle?

A Yes.

Q That is to say, whether it hits the top, the bottom, or the middle?

A Yes, right.

Q If it hits at the top --

THE COURT: Mr. Goldenberg, you said "Can we agree also".

MR. GOLDENBERG: I am sorry.

THE COURT: Do I interpret that to mean that you feel that he answered your question yes?

MR. GOLDENBERG: No, your Honor. I misspoke and I should withdraw that. That is quite right.

Ribbens - cross

BY MR. GOLDENBERG:

Q Can we agree that an element determining the direction of ball travel is where the ball hits on the paddle?

A Yes.

Q If it hits at the top of the paddle, the ball always travels upwardly?

A Yes.

Q Is that correct?

A Yes.

Q If it hits on the bottom of the paddle, the ball always travels downwardly?

A Yes.

Q If it hits in the middle of the paddle, it always bounces straight back and travels horizontally?

A Yes.

I would have to think about how the device operates.

Yes.

Q Is that correct?

A Yes.

Q Thank you.

That is always the case?

A I believe that is always the case.

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THE COURT: It may not be important, but what is the zone of middle and up and lower?

That is not a good question. What do you mean by the top of the paddle and the bottom of the paddle?

THE WITNESS: The number of the lines. If you look at the paddle, you will see that it consists of a number of lines. Depending upon where the ball is in relationship to the paddle at the instant coincidence is generated, that is how we define the zone of the paddle.

THE COURT: Where for instance is the dividing line between the upper portion of the paddle, where the ball goes up, and the middle portion, where it would go horizontal after striking?

THE WITNESS: There are three segments above and three segments below the middle of the paddle, so you can have the possibility of three vertical components and three --

THE COURT: I see.

MR. GOLDENBERG: Your Honor, on Plaintiff's Exhibit 91-B, in the lower left-hand corner, there is a little diagram which shows vertical paddle plays. The paddle is shown as 14 horizontal lines and the

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ball as four horizontal lines.

I do not myself know at the moment how those are divided up with respect to what we have just been talking about. We do have a witness who would be able to provide that information.

BY MR. GOLDENBERG:

Q Dr. Ribbens, in the '507 patent, can we have our understanding that we had last week, that when I make reference to the disclosure of that patent, I am making reference to the drawings and the descriptive text?

A Okay.

Q So that we are not talking about claims.

A Okay.

Q In the '507 patent, is there anything which causes the vertical travel of the ball to be determined upon where the ball hits on the paddle?

A No.

Q Even though we don't have complete agreement on this matter, assuming, sir, that there is something in the defendants' games which makes one of the elements of the ball vertical travel to be the position of the paddles on the screen -- assuming that for the moment -- is there anything in the '507 patent which does that?

A No.

Ribbens - cross

Q Is there anything in the '598 patent which makes the vertical direction of ball travel after coincidence to be dependent upon where the ball hits on the paddle?

A It is not specifically called out, although it is not precluded by the discussion.

Q It is not taught or disclosed in the text or drawings, is it?

A That specific example of having the vertical motion of the ball after coincidence being a function of the position of the paddle is not specifically referred to, nor is it, however, precluded.

Q All right, sir. Could I understand where you say it is not precluded, you believe that the claims teach or disclose such a concept, is that correct?

A Well, I believe -- let me just look through the text for a moment.

I believe there is a possibility for the motion to be --

Q All right, sir. Is this the '598 patent you are looking at?

A Oh, you are looking at '598. Pardon me. Either one.

Q Let's look at the '507 patent, sir.

A All right. It is harder to look for something

which is not stated than it is for something which is specifically stated, but I don't believe it is precluded by any statement that would say that the vertical motion of the ball is independent of where the paddle is in -- excuse me. Am I speaking to you, Mr. Goldenberg?

Q I am sorry.

A I say that there is nothing in the text which specifically states that the motion of the ball after coincidence cannot be influenced by the position of the paddle.

The only thing that the patent teaches is that the motion is altered after coincidence; that coincidence is detected and that control signals are generated somewhere which can provide a change in the motion of the ball.

That motion can be altered to make a ball go up or down or go back horizontally. To me there is nothing that precludes the possibility of having the motion be dependent upon the paddle position.

Q Sir, I know we have gone over this before, but your response compels us to do it again.

In the '507 patent --

A You have '598 up there.

Q I am sorry.

In the '507 patent, -- and this is Plaintiff's Exhibit 89 -- the motion of the ball after coincidence is altered by manipulation of the knobs 127 and 128, isn't that correct?

A That figure teaches that, yes.

Q If those knobs aren't touched, the ball is

just going to go on in some position determined by the previous setting of those knobs, isn't it?

A Yes, that is correct.

Q That previous setting, by the way, establishes a voltage level, doesn't it?

A That is correct.

Q Still with reference to Claim 51 of the '507 patent, can you point out in the text of the patent where the phrase "distinct motion" is used and explain?

A Where the phrase "distinct motion" is used?

Well, it will take me a while to search through it to find that exact phrase, and that exact phrase may not be here.

Q I don't believe it is used, but I do want you to take the time to try to find it in case I have overlooked it.

A Well, I don't recall that exact phrase being used either in those particular words.

However, the implication and the suggestion is made that the motion of the ball is changed after coincidence. That to me implies that a distinct motion can be imparted.

Q What does the word "distinct" mean?

A Distinct as being a given motion; that is, the ball instead of stopping, for example, or disappear-

ing is given a definite motion.

Q Did you look it up in a dictionary, sir?

A No, I haven't looked it up.

Q Doesn't it mean unique, the dictionary definition?

A I can't say that it does or doesn't. I am willing to accept that as a synonym for distinct.

Q I thought perhaps you had done that.

A I think there are a number of synonyms for distinct that we would agree upon. Unique is one of them, as opposed to an ambiguous motion.

I think the interpretation we are giving to the term distinct is the opposite of an ambiguous motion or an indeterminate motion.

Ribbens - cross

Q That is the interpretation you are giving to it?

A Yes.

Q If we can turn to the claim of the '507 patent, and that is on column 6.

A I have found it.

Q I am sorry. Column 26. Forgive me.

A Yes.

Q Do you have that, sir?

A I am with you.

THE COURT: What claim number again?

MR. GOLDENBERG: Claim 25, your Honor. This is one of the claims we are charged to have infringed.

BY THE WITNESS:

A In my notes to this, I have called that predictable according to a set of rules, as opposed to random or unpredictable.

BY MR. GOLDENBERG:

Q This is a definition you have for "distinct"?

A That is a synonym for "distinct", I believe.

Q "Predictable according to a set of rules," rather than what?

A Random, or -- well, unpredictable. Such that the motion -- "distinct", I think, is the opposite of

"unpredictable."

Q I direct your attention to Claim 25. Would you perhaps agree with me that the only difference between Claim 25 and Claim 51 that we just went through was that Claim 25 calls for a standard television receiver?

A Let's see.

Q Claim 51 calls for a television receiver.

A Let me read it again. I believe that is correct, but let me read it.

(There was a brief interruption, after which the following further proceedings were had herein:)

BY THE WITNESS:

A Yes. The succeeding clauses appear to be identical.

BY MR. GOLDENBERG:

Q Do I have a correct understanding of your testimony that a standard television receiver is a device capable of receiving broadcast television signals?

A It may or may not be capable of receiving broadcast signals. I think the essence of the standard television receiver as taught by the text of '507 and '598 is that it is capable of receiving video signals and displaying a two-dimensional image on the face of the

television picture tube.

Q With reference to the text of the '507 patent, could you give me those portions of the text which you say teach or set forth a standard television receiver as simply a device capable of receiving video signals rather than broadcast signals?

A Those words don't appear directly in there. However, I think if you look at -- if I could direct your attention to Fig. 18 and the test associated with Fig. 18, Fig. 18A is attempting to teach, and in fact it does teach, a means for playing an interactive game on a television receiver by means of generating signals in timed relationship to vertical and horizontal synchronizing pulses.

Q Now, the block --

THE COURT: Have you finished your answer?

THE WITNESS: I did break off in the middle of it. I think I have some other words that go with it. I could quote from the text if I could take the time to find it if it is important enough to the record. I think the figure itself describes what is meant by a standard television receiver, however.

BY MR. GOLDENBERG:

Q And the figures makes reference to a conventional television receiver and shows as one of the elements of such a device a video detector, is that correct?

A Yes. That is correct.

Q Now, could you tell us what a video detector is?

A Yes. The video detector is the component in the television receiver which removes the video information, the essential information, for displaying a picture from an RF carrier, or, in this case, actually an IF carrier, because this would be a superheterodyne receiver.

Q In the conventional television receiver, therefore, it includes what we have been calling the front end, does it not?

A Yes.

Q Now, if one is going to put signals into that kind of device and have those signals become useful signals, that is to say you have symbols displayed on the screen, whatever they may be, you are going to have to put in a modulated radio frequency wave, aren't you?

A Only if you use the antenna terminals. If you connect the output of the device to the connection point between the video detector and the video amplifier, then it is not necessary.

Q I understand that, sir, and I am talking about going in through the front end?

A If you are going in through the antenna terminals, then you must modulate on a carrier.

Q That is what is shown here in Fig. 12A, Plaintiff's Exhibit 89, isn't that correct?

A Yes. That is correct.

Q In the summer and RF oscillator?

A Yes. That is correct.

Q Now, there is nothing like that in any of the defendants' games, is there?

A There doesn't happen to be anything that I have seen in the defendants' games which utilizes an RF oscillator for coupling the signal into the television receiver. However, as taught by Fig. 18A,

it is possible to enter the television receiver without going through the antenna terminals, and you can bypass the front end of the television receiver.

Q But Fig. 18A does show a "conventional television receiver", does it not?

A Yes. That is correct. It certainly does.

Q Now if I could return again to Claim 25 of the '507 patent, I think you have answered this a moment ago, that about the only difference between that claim and Claim 51 is that one says a standard television receiver and the other one says, Claim 51 says, "Television receiver.".

Q Yes.

Q And to the extent that you have testified about means for generating hitting symbols and hit symbols and coincidence and imparting a distinct motion, would your answers with respect to Claim 25 be the same as your answers with respect to Claim 51?

A Yes. If I understand the question correctly. I hope I understand your question correctly.

Q If you don't understand it, I would appreciate if you would inform me.

A With respect to displaying symbols on a television receiver screen, the apparatus -- would you please repeat the continuing part of the question?

Q Let me perhaps restate it.

To the extent that you have answered questions either from Mr. Anderson or myself about the

circuits, the functions of those circuits, in the defendants' claims, with respect to Claim 51, and we have gone through that, would your answers be the same if I were to put the same questions to you with respect to Claim 25?

A Yes. The only difference would be in one case you might wish to use an RF carrier, or you may or may not use an RF carrier. I think the essential signals are derived in relationship to the synchronizing pulses and the synchronizing information must be delivered to the television receiver. Those are the irreducible minimums to make the television receiver work.

Whether or not we use an RF carrier and modulate this video information on the RF carrier is the choice of the designer of the game.

Q Perhaps I am not making myself clear. Here what I have reference to are those questions I put to you about the circuit components of the defendants' devices, the fact that they use counters and adders and such as that, in the elements which go into determining the ball bounce.

To the extent that I put questions to you about that kind of thing with respect to Claim 51, would you give the same answers were I to put the same questions to you with respect to Claim 25?

A Yes, I would. I believe that the components which we have discussed include a number of counting devices and logic devices which operate in relationship to the synchronizing pulse and generate a time-delayed pulse, so that we have a composite video signal consisting of synchronizing pulses and the signal pulses which bear a unique relationship to those synchronizing pulses, depending on which symbol it is we are discussing, whether we are player-controlled or game-controlled.

Basically, I agree that I would answer the same.

Q You would answer the same way?

A Yes.

Q Now I would direct your attention to Claim 28 of the '507 patent.

A "... wherein said means for generating a hit symbol include means for providing horizontal and vertical control signals for varying the horizontal and vertical positions of said hit symbol."

Q I don't believe that the two drawings you have marked up in various colors, Plaintiff's Exhibits 91-A and 91-B, show where that kind of means is, the means that you have just read in Claim 28.

A "... means for providing horizontal control signals --"

Q Providing --

A I'm sorry. I read the wrong claim.

Q This is Claim 28.

A I know. "... means for generating a hit symbol," and so on.

I might call your attention to the pre-set inputs to the counters. I view those as being control signals which determine the motion of the ball, the hit spot.

BY MR. GOLDENBERG:

Q Can you agree that what we are looking for here are means for providing horizontal and vertical control signals for varying the horizontal and vertical position of the ball?

A Yes.

Q Where have you marked those up?

A I haven't marked them specifically.

Q On either one of those exhibits?

A No.

Q That is, PX 91-A --

A No. I haven't taken the trouble to mark those, but I can call your attention to them.

Q Have you testified about them?

A I don't believe I have. Not specifically, other than to the extent we have talked about the pre-set inputs as providing the inputs to the counters.

Q I direct your attention to Claim 29 of the '507 patent. That claim depends from Claim 28, does it not?

A Yes, it does.

Q That says "means for providing horizontal control signals for said hit symbol includes means for causing said hit symbol to move back and forth across the screen when triggered."

A Yes.

Q Could you tell me that that is in the '507 patent?

A I have to come closer. My eyes aren't good enough to see it from here.

The horizontal control signal would be the line which is numbered 118 in Exhibit 89. So we have control signals either HL or HR, which pass through the lead from point 118 to the Spot 3 Generator.

Q That is the means for --

A That is a control signal.

Q For causing the hit symbol to move back and forth across the screen when triggered?

A Yes.

Q What does that mean? Does that mean that -- well, in the first place, what is "triggered"?

A Well, "triggered" is the connection from the coincidence detector to the Flip-Flop in the particular example. Whenever either the Spot 3 video pulse simultaneously occurs with either the signal from the Spot 1 or Spot 2 video pulse, then a signal is generated in the coincidence detector which alters the state of the Flip-Flop, and that changes the voltage at 118 from that determined by the voltage at Potentiometer 135 or Potentiometer 134, and vice versa.

Q Is it the Flip-Flop 122 that is triggered?
Is that the thing that is triggered?

A Yes. The Flip-Flop is triggered in this case.

Q When that is triggered --

A That causes the motion of the ball to go from one direction to the other.

Q Does it cause the ball to go back and forth across the screen?

A Yes.

Q One triggering makes it go back and forth?

A No. I mean if you are talking about back and forth it must reach coincidence alternately between Spot 1 and Spot 2 video. But it certainly provides that function whenever coincidence is achieved alternately between one player and the other, and the Spot 3 generator, the ball, as we demonstrated in the courtroom.

Q So if it is triggered once, it is going to go in one direction, and the next time it is triggered it is going to go in the opposite direction, is that it?

A Yes. From the example of Exhibit 89, that's correct.

Q And that doesn't mean that the ball is constantly going back and forth across the screen with nothing happening, does it?

A With nothing happening? No.

Q No coincidence?

A The example game that is being taught here is a ping pong game, in which the objective of the game is to bring paddles into coincidence with the ball. So we are talking about a normal volley situation between a pair of players, in which the ball is going back and forth, and in that circumstance the ball certainly is being caused to go back and forth across the screen.

Q I see.

A That motion ceases when one player fails to bring his paddle into coincidence with the ball.

Q Thank you, sir. I just wanted to get your understanding of that.

Now, where is that means in the defendants' games?

A You are talking about Claim 29, am I not correct?

Q Yes, sir.

A Well, that would be provided by components H4B, H4C and H4D.

Q Slow down a bit. What figure are we talking about?

A I assume you are still talking about 91-A.

Q All right.

A That is what you called my attention to earlier, and we have a little orange dashed line surrounding three components, and those components hold the pre-set inputs to the horizontal counter G7, which determines the motion of the ball, the horizontal motion of the ball.

Q Is that H4B, H4C and H4D?

A Correct. They combine to provide a pair of wires which connect to the terminals -- I have to take my glasses off -- 3 and 4 of G7. Those are the control

signals which cause horizontal motion back and forth across the screen.

Q And the output of that particular circuit you just described, does that go to element G7?

A That is what I said.

Q What is the 9316 unit?

A It is a preset counter.

Q A preset counter?

A Yes.

Q It is not a flip-flop, is it?

A No. It is not a flip-flop. However, if you will note just above, Mr. Goldenberg, with respect to the control signals, the inputs for this set of gates comes from a 7474, which is a D-type flip-flop. That is component H3B.

Q Where should I look?

A The top portion of 91-A, in the large rectangle outlined in solid orange, "Hit symbol", you will find a dashed orange line around the component H3B. That is a D-type flip-flop.

Q And the output of that flip-flop goes to what, sir, that group of gates, H4B, H4C and H4D?

A That's correct.

Q But that in turn goes to a counter?

A That is correct.

MR. GOLDENBERG: Mr. Anderson, am I correct that Claim 31 is in issue?

MR. ANDERSON: Claim 31 is listed in paragraph 29 of the agreed statement of facts.

MR. GOLDENBERG: As to --

MR. ANDERSON: As to Groups A and B.

MR. GOLDENBERG: Thank you, sir.

BY MR. GOLDENBERG:

Q Dr. Ribbens, I direct your attention to Claim 31 of the '507 patent.

(There was a brief interruption,
after which the following further
proceedings were had herein:)

THE WITNESS: I have read it.

BY MR. GOLDENBERG:

Q What is the difference between Claim 31 and Claim 29, from which it depends?

MR. ANDERSON: Your Honor, I object, only in that Dr. Ribbens is not a patent attorney. I have avoided asking collective questions about whole claims, but specifically have referred only to elements of claims.

THE COURT: Overruled.

BY THE WITNESS:

A I think the point of Claim 31 is to give the possibility to have the vertical component, the velocity, changed, and in 29 it might be enough just to have the horizontal motion altered. We are only talking about the horizontal motion in 29, whereas in 31 there is a possibility that the ball will reach coincidence with the paddle in a non-orthogonal direction, in which case after coincidence it would change its direction, so that there is a possibility now of having both the vertical motion changed and a horizontal motion change.

Ribbens - cross

Q Let me understand this. Claim 29, if I understand you, limits the change of direction to purely a horizontal change of direction, is that correct?

A Let me just read it again. I think that is correct.

(There was a brief interruption, after which the following further proceedings were had herein:)

BY THE WITNESS:

A Yes, it is talking about the horizontal control segment and allows for the possibility of the ball to reverse its horizontal motion; whereas in Claim 31, we have the possibility of, you know, an arbitrary direction of motion of the ball relative to the paddle's normal component.

BY MR. GOLDENBERG:

Q I see. Can we agree that the question -- I am sorry. I withdraw that.

Would it be true then that Claim 31 is perhaps a more specific statement than Claim 29?

A Perhaps more specific?

I am sorry. Your questions are a little ambiguous to me.

Q I apologize.

A I know. I am not trying to be obtuse either, sir.

Q Both of us have the same problem, sir. We are trying to deal with claims that neither one of us wrote.

A No, that is not the problem. The problem is the wording of the question, I believe, if you will excuse me, and I am not trying to be obtuse in my answers; but when you say "Be more specific," that is grammatically incomplete to me somehow.

More specific than what?

Q More specific than Claim 29.

A With respect to what criteria? I don't know what criteria you are implying.

Q With respect to ball motion after coincidence.

A I think 29 is directed specifically to the horizontal motion controlling circuitry. I think 31 is directed towards both vertical and horizontal motion.

Q All right, sir. I now direct your attention to Claim 32 of the '507 patent.

First, could you describe the circuitry in the '507 patent that performs that function?

A Yes, I believe in Figure 15A --

Q I am sorry. What is that?

A In Figure 15A -- this is on sheet 12 -- 15A,

15B, and below it 16B, indicates that the ball is to experience a collision with a predetermined portion on the screen.

That is not specifically identified in Figure 12A, if that is what you were asking me.

Q No, for the moment I wasn't. I didn't believe it was.

What is the relationship of that kind of circuitry and the circuitry in the '598 patent which permits bounce off of a displayed wall or barrier?

A The relationship is that the coincidence could be determined in the same way; that is, we are talking about detecting the position of a ball at some point on the screen, which implies a form of coincidence, at least as one possibility, and then the motion of the hit spot would be altered after coincidence.

Q Wouldn't it be so that the only difference between the '507 and the '598 patents in that respect is that in the '598 patent, this wall is displayed as a symbol for the player to observe?

A That is certainly not the only difference between '507 and '598.

Q No, sir, I said in this respect.

A I will have to think about that.

Ribbens - cross

Certainly '598 teaches the display of a fixed visible barrier from which the hit spot can bounce. '507 has an illustration of the possibility of the ball bouncing off a predetermined position, but it doesn't call for the display of that symbol.

Q So that the only difference in that respect is the display of the wall?

A I am always worried about agreeing to the "only difference" because that encompasses so many other possibilities.

Q I understand.

A I will certainly agree that it is a difference. I will agree.

Q In that respect.

I do want you to understand that my question is limited to this matter of wall bounce.

A I can agree that there is a figure which depicts the possibility of the bounce of the ball off a predetermined position, but I wouldn't call it wall bounce.

Q That is in the '507 patent, isn't it, sir?

A Even if I were to call it wall bounce, the idea is -- I guess you are asking me is the only difference between the possibility of a ball experiencing a collision and appearing to bounce from a predetermined position in

Ribbens - cross

'507 and '598 is that we are displaying a wall? Is that your question?

Q In substance, yes, sir.

A Yes, I believe it is, although I don't believe the possibility for displaying the wall was evident, that is, in a satisfactory way was evident from the circuitry as taught by '507.

Q I understand, sir, but that feature of bouncing off a predetermined position displayed or not displayed is claimed as part of the invention in the '507 patent, isn't it, and I direct your attention --

A Yes.

Q -- to Claim 32.

A Yes, Claim 32 refers to detecting coincidence between a hit symbol -- well, let's see. No, it doesn't state that specifically.

It just talks about the possibility of causing the hit symbol to move away from a predetermined position on the screen with a reflection angle equal to the incidence angle at which the hit symbol approached said predetermined position.

So we will call that an elastic collision, perhaps.

Q An elastic collision, all right, sir.

I direct your attention to Claim 44 of the '507 patent. Are any of the defendants' games baseball type games?

A As baseball is defined by Claim 44, I believe they are.

Q As baseball is defined by the rest of the world, are they?

A I don't know how the rest of the world defines it.

Q Oh, I see. Well, it is usually a game played by nine men, or roughly that number, and someone pitches a ball toward a batter and the batter tries to hit the ball and run around bases.

Do you have any different view of baseball?

A No, but I believe what we are talking about here is a means for simulating games. To the extent that our game is ping-pong, as taught by Figure 12A of '507, we are looking at a simulation of a ping pong game as viewed in one direction with a two dimensional image.

Q I understand that, sir, but let's take the simplest kind of baseball game. Is there any of the defendants' games where a symbolic player throws a symbolic ball at a symbolic batter?

A No, if you are talking about a pictorial representation on the screen of a player throwing a ball, that is, representing a hit figure in some sense, no.

Q There is nothing like that in the defendants' games?

A But I don't believe that the claim defines baseball type game as requiring the display of some sort of a stick figure that would appear to be hurling the ball.

MR. GOLDENBERG: I am sorry. Could I have

that answer back?

A (Read by the reporter.)

BY MR. GOLDENBERG:

Q Let's put stick figure aside. I don't care if it is a rectangle.

Certainly a bare bones essential of baseball is somebody throwing a ball at a batter, isn't it?

A According to your definition of baseball, that is true. However, I am only taking the words that appear in Claim 44, "Apparatus for playing a baseball type game on the screen of a cathode ray tube comprising means for displaying hit spot."

That is all it asks for, a hit spot as taught in the text of Patent '507 as being a device which generates an output signal, which bears a time relationship to the synchronizing pulses, which is under game control.

"Means for displaying a hitting spot" is apparatus which generates a signal, which has a determined time delay from the horizontal and vertical synchronizing pulses, that time delay being determined by the player.

"Means for adjusting the vertical position of said hitting spot" is some control signal which can cause that time delay to vary in such a way as to

cause the vertical position of the spot symbol.

"Means for serving said hit spot" is means for causing the ball to reappear on the screen after it has disappeared or after a game point has been scored.

"Means for varying the vertical position of said hit spot," that could be provided control signals which cause its vertical time delay relative to the vertical synchronizing pulse to change in response to game play.

"Means for denoting coincidence between said hit and hitting spot whereby said hit spot would reverse direction." I think we have identified all of those elements in the games.

So as defined by Claim 44, that meets the criteria for what the person writing the patent called a baseball type game.

Ribbens - cross

Q I see, sir.

Is there any description of a baseball type game in the '507 patent?

A I don't believe so, but I could look if you want me to take the time to do so.

Q If you would, I would like you to be sure about your answer.

A I don't believe it uses the word baseball, but it might. Let me just see. It is easier if I look through this list of figures.

(There was a brief interruption, after which the following further proceedings were had herein:)

BY THE WITNESS:

A Yes, Figure 12D is a sketch of a TV screen, illustrating the manner of play of a simulated baseball game.

So I would refer to the portion of the text which describes 12D. I haven't yet found it.

The text does not seem to follow in the same sequence as the figures, so it is taking me a little longer to find it.

Ribbens - cross

BY MR. GOLDENBERG:

Q I understand. I think if you look in column 15.

A Yes, that is probably where it is.

Q Around line 48.

A "Another game which can be played using most of the system shown in Fig. 12A is a simulated baseball type game."

In this game, reading on, "The pitcher controls the path of a ball 140 by adjusting knobs 127 and 128 connected to potentiometers 125 and 126."

So this would be using the potentiometers in -- let's see, what numbers are they?

Q Well, it is our old friends 127 and 128, isn't it?

A 127 and 128, yes, to control the vertical motion of the ball.

Q Could you read the paragraph describing how the game is played?

A All right.

Q I would ask that you start at line 51, unless you want to start earlier than that.

A No, that is all right.

Do you want me to read it aloud? Is that

what you are asking me?

Q Yes, sir.

THE COURT: Excuse me. Now where are you?

THE WITNESS: Column 15, line 51.

THE COURT: All right.

BY THE WITNESS:

A "The pitcher controls the path of a ball 140 by adjusting knobs 127 and 128 connected to potentiometers 125 and 126 which, therefore, controls V_L and V_R ."

Those are the virtual end-point positions of the locus of the ball off the screen to the right and to the left, the vertical position.

BY MR. GOLDENBERG:

Q Could you return to the text, sir, and read a bit slower?

A "The ball, therefore, goes from position $H_L V_L$ --" those are the coordinates of the off-screen position of the ball at the left -- "to $H_R V_R$ --" which are the coordinates of the off-screen position of the ball on the right.

"Another knob (not shown) is connected to potentiometer 134 and thereby permits speed control by the pitcher. The batter tries to hit ball 140 by moving that 141 (Spot 2) vertically by turning knob 132.

Ribbens - cross

"Spot 1 is not required for this game. If the batter connects, the ball will be hit left, back to position $H_L V_L$. If the batter misses, the ball will be automatically returned as in the above games."

Then there is an alternate embodiment,
"The free running serve Flip-Flop can be eliminated and a pushbutton set and reset of Flip-Flop 122 can be used for manual 'pitch' and reset."

I believe that is the end of that discussion.

Ribbens - cross

Q In that game of baseball there, would you agree that the pitcher has two manual controls -- well, actually he has three manual controls, doesn't he?

A There is a possibility of three.

Q I know, sir. We are taking the language as it says there, that he has three manual controls. He can control the horizontal and vertical travel of the ball, and he can control the speed of the ball.

A Yes.

Q Is there anything like that in any of the defendants' devices?

A The game could be interpreted that way.

Q The defendants' devices?

A Yes, you are talking about Pro Tennis. In Pro Tennis there is the possibility of bringing the ball across to the left. I think, however -- well, let me continue with what I was going to say.

One player could view himself as being a batter and the other one as the pitcher. In providing pitches to the other player, he is obliged to move the position of the paddle to cause coincidence to be on one of the paddle segments. Thereby, he can control the vertical velocity.

So, I mean, with respect to the elements

of the game, particularly as described by Claim 44, the elements are there.

Q Would you be willing, sir, if I plugged in that Pro Tennis over there, to play a baseball game such as you have just described on that apparatus?

A Well, I am not the least bit skilled in controlling the position on the paddle of where the ball might hit, not at all.

I think in applying Claim 44, I am obliged to read the elements of the claim, and I can show on the schematic diagram where there is a means for displaying a hit spot.

I can show where there is a means for displaying a hitting spot.

Q All right, sir, let's go to the elements of Claim 44.

I take it we would agree that the hitting spot is the paddle, right?

A The hitting spot is the paddle, yes.

Q The hit spot is the ball?

A That is correct.

Q Where is there a means in any of the defendants' games for serving the hit spot or serving the ball?

A There is a serve because when the ball goes off

the screen, there has to be a possibility for bringing the ball back onto the screen. So to the extent that we interpret serve as being a means for bringing the game back into play after the ball goes off screen, there is a means for serving.

Q We interpret serve in the light of the patent disclosure -- and once again I have reference to the drawings in the text.

A Yes.

Q Serve in the light of the patent disclosure means that when the ball has gone off screen, it stays off screen until the player pushes a serve button, doesn't it?

A Either that, or the claim does teach the possibility of using a monostable for automatically serving the ball. So you have either a manual or automatic.

Q So if it goes off screen to the right, it is served from the right, isn't that correct, whether that is done manually or whether it is done automatically?

A Because of the free running Flip-Flop you are saying?

Q Yes, sir.

A Yes.

Q That is what the patent teaches about serving, doesn't it?

Patent text and drawings now.

A Beg your pardon?

Q The patent text and drawings.

A Yes, that is correct. It teaches that the game can be initiated again by a free-running Flip-Flop. That would be such as to cause the ball to come back in after it has gone off screen.

Q Isn't it the fact that in the defendants' games when the ball goes off screen, the first thing that happens is a score is registered. That is a miss, isn't it?

A That is correct.

Q When the ball is served, it is not served from that side of the screen. Doesn't it reappear in the center of the screen?

A Yes, it does.

Q Doesn't it move toward the player who just lost the point?

A Yes.

Q That is different from the serve which is disclosed in the patent, isn't it?

A That is different.

Q The next element in that Claim 44 is "means for varying the vertical position of the hit spot," and this is means for changing the vertical position of the

ball?

A That is correct.

Q Isn't that the potentiometer knobs such as 111 and 112, that the player can control the vertical position of the ball?

A In the example of Figure 12A from '598, that is correct.

Q How about in any other figure of the patent; is that something different?

A I will have to look.

Q Other than being a knob which sets the voltage level?

A No, there is the possibility of changing the vertical motion electronically, as taught in the text, that is.

Q Where is that, sir?

A Column 15, I believe about line 24, there is a phrase "or a random or pseudo-random electronic change of V_R and V_L can be used."

So there is a suggestion for a non-potentiometer or non-manual type of vertical motion change.

Q That is column 15, what line, sir?

A 24, at the bottom of that paragraph which ends at line 25, there is a sentence.

Q I see, sir.

A This talks about an electronic means for altering the vertical motion.

Q So that means for doing this thing can either be manual or a random electronic means, according to the patent?

A Or pseudo-random or electronic.

Q Pseudo-random?

A Right.

Q All right, sir.

Can you agree with me that there is nothing in the defendants' claims that permits a manual change of the vertical position of the ball?

A No, I won't because to the extent that the player can control coincidence with the ball --

Q This is this matter of where it hits on the paddle again; is that it?

A Yes, that gives him manual control over the vertical velocity.

Q I direct your attention to Claim 45 of the '507 patent.

A I have it.

Q We agree that the only difference between that claim and Claim 51 is that that makes reference to a cathode ray tube rather than a television receiver -- or that is one difference. Another difference is that it calls for a second hitting spot, whereas Claim 51 calls for only one hitting symbol.

A Certainly the calling for a second hitting spot is a difference between the claims, yes.

Q So those two differences are there. Otherwise, it is essentially the same, isn't it?

MR. ANDERSON: Your Honor, the claims speak for themselves.

THE COURT: Well, I know that. But for purposes of facilitating our analysis, it doesn't hurt anything to have an answer to the question.

MR. GOLDENBERG: Your Honor -- well, you have ruled?

THE COURT: I am overruling the objection.

BY THE WITNESS:

A I think there are other differences between them. For example, in Claim 45 the author specifically called for means for controlling the position of first

and second hitting spots.

BY MR. GOLDENBERG:

Q I am sorry, sir. I overlooked that. So that the position of the hitting spots -- those are the paddles -- those can be controlled, is that correct?

A Yes.

MR. GOLDENBERG: Dr. Ribbens and your Honor, I apologize. What I really am trying to do is to cover these claims in the quickest way possible. I want to avoid, if I can, going through each one of them in endless detail.

THE COURT: Right. I approve of that means.

MR. GOLDENBERG: We will see if it works.

BY MR. GOLDENBERG:

Q I want to be sure that we have all the differences between Claim 45 and Claim 51. I believe they come down, sir, to that there is a cathode ray tube, there is a second hitting spot, and there is means for controlling the positions of the two hitting spots, is that correct?

A Well, then there is also means for controlling the position of said hit spot, which would be the game control spot, and would be game controlled electronics, and in Claim 51 the wording is different. There it says means for generating a hit symbol and means for

ascertaining coincidence. That certainly is the same.
The ascertaining coincidence is the same.

And means for imparting a distinct motion.
That is the same.

Q Now, the first and second hitting spots are paddles, are they not, and this is in Claim 45?

A I guess you would call them paddles. They are first and second hitting spots. They are player-controllable symbols which are displayed on the television -- excuse me -- on the cathode ray tube.

Q I am talking about the defendants' games now.

A I didn't hear the last part of that.

Q I said I am talking about the defendants' games.

A Then the first and second hitting spots --

Q Your testimony would be that that refers to the paddles?

A Of the defendants' games, yes. That's correct.

Q The hit spot would be the ball, is that correct?

A That's correct.

Q What would be the means for controlling the position of the first and second hitting spots?

A In the defendants' games?

Q Yes.

A Those would be the potentiometers.

Q By themselves?

A Well, of course in conjunction with the circuitry required to provide the time delay, because really the position of the spots is determined by a time delay of the point of generation of the symbol relative to the horizontal and vertical synchronizing spots. So to the extent that we are controlling the position of the first and second hitting spots, we are controlling the time delay from vertical synchronizing pulse to the number of lines in which the paddles are displayed.

Q But the means for controlling the position of those hitting spots include more than a timer, does it not, in the defendants' games?

A Yes.

Q Could you state what it does include?

A Yes. If you want to start with Paddle Ball?

Q Yes, sir. I think that is Plaintiff's Exhibit 91-A.

A The vertical position is determined -- well, first of all, by the synchronizing information, which enters the timer as S9, which provides the trigger input to the 555 timers, so that the time delay from that synchronizing pulse to the occurrence of the symbol is determined by the position of the potentiometer, labeled "Left" in the case of B9, and labeled "Right" in the case of A9. That determines the vertical position.

Q That's it? That is the only circuitry involved, that timer?

A In determining the position.

Q Nothing else?

A That is always such a dangerous question to answer, because there is always the horizontal position which is determined by the remainder of the circuitry.

Q Let's take a chance, you and I.

A Pardon?

Q Dangerous it may be, but let's take a chance.

A I would just like to be precise. So that the composite hitting symbol is generated at Component G2C. It is a combination of the outputs of the 7493 counters and the associated logic and the signal coming in at pin 9 of G2C, which determines the paddle horizontal position. And then there is a signal coming in at pin 10, which is F9 in the case of the left paddle and not F9 in the case of the right paddle.

Q Now, it does seem to me you have described far more than a timer for performing that function, would you agree?

A Well, I want to know what function I am describing. Are you talking about the total position?

Q Means for controlling the position of the first and second game spots.

A The position involves both the horizontal and vertical position, and those portions are determined in relationship to both the vertical and horizontal synchronizing pulses.

Q And something more than that timer is provided in the defendants' devices to do that job, isn't it?

A The timer provides the time delay from the vertical synchronizing pulse to the vertical position.

Q I understand that, sir. But that isn't the

end of it. There is additional circuitry beyond that.

A Yes, but that determines the horizontal position, and the other circuitry -- for example, the counter and the logic -- determine the height of the paddle, the number of horizontal lines.

Q Therefore, when one looks to all the elements to control the position of the paddles, of the first and second hitting spots, those are the elements one must look to?

A Yes.

Q Are there any elements in the '507 patent which operate in the same way?

A Oh, yes.

Q To control the position of the paddle?

A Oh, yes. Very definitely, because the position of the paddle is determined by the time delay from the synchronizing pulse.

Q How about these other elements you have just described?

A What other elements? Are you talking about the devices themselves?

Q The elements that determine the position of the paddle. Did I misunderstand you?

A I may be misunderstanding your question. I want to know what you are asking me about. Are you asking me about the components themselves?

Q My question to you is what are the circuit elements which control the position of the paddles? Can you tell me those? I believe you said --

A Yes. The timer.

Q -- that in addition to the timer, there were other circuit elements that entered into that.

A That's correct.

Q Could you tell me what those elements are, sir?

A Yes. There is a 7493, which determines the paddle height.

There is a G2C which determines the

composite paddle and it combines the paddle vertical information with the paddle horizontal information to give the composite position of the paddle.

However, these components function essentially by measuring the time delay from both the horizontal and the vertical synchronizing pulse, which is, as taught by the patents '507 and '598, the means for generating hit symbol or hitting symbol.

Q Now, one of the inputs to G2C is the paddle horizontal information.

A Yes.

Q Where does that come from, sir?

A It comes from the block outlined in purple. There is, in fact, a two input AND Gate, G3C.

Q I think we have had your testimony before that the 7493 is a counter.

A 7493 is a counter.

Q What is 7474?

A That is a D-type flip-flop.

Q Now, in the means, in the '507 patent, for determining the position of the paddles, is that a counter?

A No, there is not a counter. The counter here is just functioning to determine a time delay basically.

Q I understand your position on that, sir. But there is no counter?

A There is no counter.

Q Is there anything that acts like a counter?

A No, there is not.

THE COURT: As I understand it, there are no counters anywhere in the '507 patent, is that true?

THE WITNESS: No, your Honor. That is true, that the counter is essentially functioning to generate a time delay.

THE COURT: I understand. Just so I don't get confused.

THE WITNESS: The actual device itself doesn't appear in the '507 schematic or text.

THE COURT: And the device which serves the same purpose in the '508 is a flip-flop?

THE WITNESS: No. No, your Honor. In '507 there is a teaching of a time delay circuit, which is based on a slicer circuit. That is the terminology which is used to describe it, and I can perhaps call your attention to an actual schematic.

THE COURT: No. That is all right. I just wanted to know --

THE WITNESS: It is choice of the slicer

circuit or a counter as a designer choice.

MR. GOLDENBERG: Could you read the last answer?

(Whereupon the record was read by the reporter as requested.)

BY MR. GOLDENBERG:

Q Whether one uses a counter or a slicer circuit, are the results the same?

A The results are the same. If you were to probe the circuits and look at the output, you would see an identical waveform. The question you would see -- you would see a waveform which bears a relationship to the synchronizing pulse, the time interval -- I am not saying that very well -- the time interval from the synchronizing pulse to the time of the occurrence of the output device is either controllable by a player, in the case of Spot 1 or Spot 2 generators, or controllable by the game --

Q Are the results the same as far as the game is concerned?

A Well, once again I am afraid that the question is rather incompletely specified. According to what set of criteria are the results the same? In other words, if I generate a signal which is a binary valued signal and has a time delay in relation to the vertical

synchronizing pulse which is under player control, then the influence of that on the display television picture tube is a symbol, which means move up and down in accordance with whether the time delay is increased or decreased.

Q The time delay in the defendants' claim determines when a counter starts counting, doesn't it?

A That's correct.

Q The time delay in the '507 patent determines what part of this sawtooth you are going to use, doesn't it? It determines the beginning of that, does it not?

A That's correct.

Q To form the spot?

A That's correct. Both determine the time delay following synchronizing pulse to the time of occurrence of the binary-valued video signal, correct.

Q Well, could you answer my question, that the time delay in the '507 patent determines when or the beginning of that portion of a sawtooth wave that is going to be used on the display? Isn't that true?

A Well, that is true. With respect to this figure -- I will need to find it again. It takes me a moment to find it.

Fig. 8. Yes. The time delay at which this binary-valued signal is produced for both the horizontal and vertical is determined by the control voltage on the slicer circuit.

Q And that is the beginning of some spot that is going to be displayed, is it not?

A Yes.

Q I would like to have you turn to Claim 1 of the '598 patent --

THE COURT: This might be a good time to take about a ten-minute recess.

(There was a short recess, after which the following further proceedings were had herein:)

THE COURT: All right, gentlemen.

BY MR. GOLDENBERG:

Q Dr. Ribbens, I would like you to turn to Claim 1 of the '598 patent.

A I have it.

Q Is it your testimony, sir, that the answers you gave to Mr. Anderson's questions about what was in the defendants' devices insofar as the specific claims that you testified about, that you would give the same answer with respect to other claims that defendants are charged with infringing in this case, is that correct?

A To the extent that the components of the claim read against that particular device, yes. Of course, the claims are all different, one from the other. Certain elements may be present, and certain may not be present.

Q Let's understand that, then. If one claim is

different from another claim, then it is not your testimony that the answer that you have provided apply to all the claims.

A It is not my --?

That is a bit complicated. Let me straighten it out in my own mind.

I'm sorry. Could you read that back?

(The record was read by the reporter as requested.)

BY THE WITNESS:

A It is the terminology that is distressing me on that.

THE COURT: Off the record for a second.

(There was a discussion off the record, after which the following further proceedings were had herein:)

THE COURT: Let's go back on the record then.

BY MR. GOLDENBERG:

Q Dr. Ribbens, you have in front of you now pages 915 and 916 of the transcript.

A Yes, I have read it.

THE COURT: Rather than ask him if that is what he said, why don't you just take off from that point?

MR. GOLDENBERG: That is what I would like to do, your Honor.

BY MR. GOLDENBERG:

Q Sir, having read what you just said, I direct your attention to Claim 1 of the '598 patent, which is one of the claims listed in the agreed-upon statement of facts.

A All right.

Q Is your answer the same with respect to that claim?

A I am still reading.

Q All right, sir.

A Yes, it is.

Q It is.

That claim calls for a total of six control signals to be generated, doesn't it?

A Yes.

Q The first and second control signals are for the

first hitting symbol generator, is that correct?

A Let me just find where you are.

Q I am in column 23.

A Yes, I know that.

"Means for generating first and second control signals for said first hitting symbol generator," yes.

Q What do those control signals do?

A They determine the vertical and horizontal position of the hitting symbol.

Q You say you find such first and second control signals in the defendants' games?

A Yes, I do.

Q It also calls for third and fourth control signals?

A Yes.

Q Those are for the second hitting symbol generator?

A That is correct.

Q Do they also control the horizontal and vertical position of the second hitting symbol?

A That is correct.

Q That would be the second paddle?

A That is correct.

Q You find those in the defendants' games?

A Yes, I do.

Q It says there are also means for generating the fifth and sixth control signals.

A Yes.

Q Those are for the hit symbol generator?

A That is correct.

Q Is that the ball?

A Yes.

Q Those you find also in the defendants' games?

A Yes, that is correct.

Q The claim goes on and says, "Means for coupling the first, second, third, and fourth control signals to said means for generating the fifth and sixth control signals."

A Yes.

Q Could you tell us where you find that in the '598 patent?

A Do you mean in the schematic?

Q In the schematic, sir.

A You have '507.

Q Excuse me.

A Yes, the control signals would be labeled e_{V1} , e_{H1} , e_{V2} , e_{H2} , e_{V3} , and e_{H3} .

The means for coupling them are by means of the outputs of the signals which appear at the

coincidence circuit. So they are coupled by virtue of coincidence circuit 125.

Q The control signals are coupled?

A Yes, they pass through; that is, the means for generating those control signals are connected to the device Dot 1, Dot 2, and Dot 3, ball generator, and by virtue of their outputs reached the coincidence circuit.

Q Now, sir --

A Then -- if you will let me finish. Excuse me.

Q Surely.

A The primary Flip-Flop and the secondary Flip-Flops are activated, which couple them to the actual knobs, that is, the potentiometers 109 with 110.

Q Have you completed your answer?

A Yes.

Q The first and second control signals are the signals e_{V1} and e_{H1} ?

A Yes.

Q That is for the first paddle?

A Yes.

Q Do they survive as control signals, as output of the Dot 1 generator? Do they still have their identity as such?

A I think they do because their role is to determine a time delay. Of course, the time delay would be

observed in the output of the signal following the synchronizing pulse.

Q I understand that, sir. Those two control signals are voltages, aren't they?

A That is correct.

Q They are voltage levels?

A They are voltage levels.

Q Do those two voltage levels appear as output of the Dot generators?

A The outputs of the Dot generators are binary value voltages.

Q Do those two voltage levels appear in the output of the dot generator?

A Do you mean does the output from Dot 1 generator consist of a voltage?

Q Two voltages.

A No, it does not. It consists of a time delay, that is correct.

Q What you have there, sir, is Dot 1 as the first paddle?

A Correct.

Q You don't have two voltages. So those two voltages have been used to form or position the first paddle, and they no longer exist as such, do they?

A The voltages themselves no longer exist. However, the function as providing a time delay is provided and reaches the coincidence circuit.

Q They have done their work and now they are gone?

A Right.

Q The same is true with respect to the Dot 2 generator and the third and fourth control voltage?

A That is correct.

Q So what is coupled to --

A To the coincidence circuit?

Q No, sir, not to the coincidence circuit. I

withdraw that coupling question.

I would ask you what are the means for generating the fifth and sixth control voltages?

A I have to read the text to make sure that I am identifying the correct control signals.

I believe they apply to the hit symbol, but let me take a moment.

Q I believe they do apply to the hit symbol.

A Yes, "means for generating fifth and sixth control signals for said hit symbol generator." Those would be the means for generating the input to e_{V3} and e_{H3} .

Q These are voltage levels also?

A That is correct.

Q The means for generating the first one of those voltages is either the potentiometer 109 or 110, is that correct?

A That is correct.

Q The other voltage is generated by what is labeled here as the secondary flip-flop 122?

A Yes.

Q I do not see any connection between the Dot 1 generator or the Dot 2 generator and the means for generating the fifth control signal.

A There is a line that goes from the output of

the Dot 1 generator and Dot 2 generator to the coincidence circuit.

The output of the coincidence circuit is coupled through the primary flip-flop to those potentiometers.

Q Yes, sir, but I thought you had testified that the means for generating the fifth control signal were the potentiometers 109 and 110.

A Yes.

Q The claim requires that the first, second, third and fourth control signals be coupled to the means for generating the fifth and sixth control signals?

A That is correct.

Q If we say -- and I think you agreed -- that the means for generating the fifth control signal was either the potentiometer 109 or 110, even taking your interpretation of these first four control signals, I do not see any connection between the Dot 1 generator and the Dot 2 generator.

A This claim is intended to apply to a broader class of games than is illustrated by sheet 17, this exhibit which you have placed before me, Figure 12A of '598.

Q Can you agree with me that there is no electrical connection so that anything looking like the first, second, third or fourth control signal can be coupled to

any means of generating a fifth control signal?

A There is an electrical connection between all of them. "Means for coupling" just says means for coupling, and "means for coupling" means they just go from one point to another.

So I am sorry to say that I still believe that the means for coupling the control signals, fifth and sixth, can be traced throughout the circuit.

Q All right, sir. I would ask you to trace the means for coupling the first four control signals to the means for generating the fifth control signal. Can you do that?

A I still think this is a poor example of the intent of that claim.

Q Would you rather work with some other figure of the patent?

A No, this will do.

I am just saying that the means for generating this control voltage is coupled by electrical connections, internal connections of the Dot 1 player generator, through a series of wires, through the coincidence detector, to the primary Flip-Flop, and that provides an output for either a cross pair of terminals A and D, which would activate potentiometer 109, or potentiometer 110, which is between C and B. That is the fifth control signal.

Similarly, there is a connection from either of e_{H1} or e_{V1} through the output of that circuitry and the coincidence detector to the secondary Flip-Flop, which has an output which activates the sixth control signal.

"Means for coupling" just means that there is an electrical connection, a continuous path, which I can follow.

Q Would you show that connection again to 109 and 110? I am sorry. I wasn't able to follow you.

A We don't have details of the elements which occur in Dot 1 generator, do we? We don't have them

displayed, so I am obliged to point out that regardless of the implementation, there will be some set of electrical connections between this point and that point.

Q We had earlier agreed that at that point, the first, second, third, and fourth control signals have disappeared. They have served their role.

A But that is not the issue in what you are asking me. You are asking me about the coupling.

Q I understand that.

A I am just interpreting what coupling is.

Q I apologize for going back. Could you answer the question with respect to coupling?

A Yes, sir, coupling to me means an electrical connection between one point and another, and there is no restriction on the number of components through which that must pass.

Q I see, sir. So in your view one signal is coupled to another circuit, even though it has completely lost its identity and performed its function earlier, is that correct?

A Coupling just means the connection between one circuit and another. That is all it means.

Q Can you direct your attention --

(There was a brief interruption, after which the following further proceedings were had herein:)

BY MR. GOLDENBERG:

Q I will come back to that. I don't want to take up time.

Could you explain with reference to either Plaintiff's Exhibit 91-A, which is the Paddle Ball game, or with reference to 91-B, whichever you choose, how the first, second, third, and forth control signals are coupled to the means for generating the fifth and sixth signals?

A First of all, I guess it would help to identify where those control signals are.

Q I think it would.

THE COURT: Excuse me. We are still on Claim 1?

MR. GOLDENBERG: We are still on Claim 1, your Honor.

THE COURT: How does this question differ from the one we just left?

MR. GOLDENBERG: The question I had before was with respect to the patent in suit. I am now asking the question with respect to the games.

THE COURT: Oh, you are now on the Paddle Ball,

okay.

BY THE WITNESS:

A Yes, a pair of control signals which determine the horizontal and vertical position of, let's say, the hitting symbol, which is outlined in purple --

BY MR. GOLDENBERG:

Q Which exhibit are we looking at?

A 91-A. The Court has made reference to Paddle Ball, which is Exhibit 91-A.

There are a pair of control signals which determine the position of the paddle. You will recall that the position of the paddle or hitting symbol is determined by the time of occurrence of that signal in relationship to the synchronizing pulse. Therefore, we may view the output of B9, which is pin 3, as a control signal.

Q B --

A B9 is a control signal.

Q Is that the first control signal?

A Yes.

Q Or the second one?

A We call that the first control signal, since there is an arbitrary choice about which is to be viewed as the first or second. There is no natural ordering to this process. So we will choose our own ordering. That would provide one control signal. The other control signal would be the inputs to Gate G2C, which determine the horizontal position. Those consist of for the left paddle F9 pin 10, and the logical inverse of the paddle horizontal, which is indicated "Paddle Horz." with an overbar.

Q The first control signal, therefore, is the output of pin 3?

A Yes.

Q Of the --

A B9.

Q -- of the B9 unit?

A Right. That is a time delayed step function which determines the starting point at the top of the paddle, activates the reset on the 7493 counter --

Q The second control signal is the inputs to pin 9 of the G2C gate, is that correct?

A Well, actually these are binary value voltages,

so that F9 and the not paddle horizontal voltage determine the horizontal position, and I view those as the second control signal.

Q This is pins 9 and 10?

A Correct.

Q Now, the third control signal would be pin 3 of the A9 unit, which is just above your purple outline there.

A That is correct. That is the true output of the 555 timer.

Q Now, the fourth control signal would be the inputs to pins 1 and 2 of G2A gate?

A No. They would be the inputs to 2 and 13.

Q 2 and 13?

A Yes. One determines the vertical component of that segment.

Q So we now have our first, second, third and fourth control signals?

A That's correct.

Now, the fifth control signal would be the preset inputs to the B3 counter, 9316, which consists of the voltages on lines which connect to pins 3, 4, 5, and 6 of B3.

Q That is the fifth control signal?

A Correct.

Q Where is the sixth?

A That would be the inputs to the G7 preset counter which come in on pins 3 and 4 of G7.

Q Now, would you explain how the first, second, third and fourth control signals are coupled to the B3 unit and the G7 unit?

A Yes, I will. The output of the three, and we will start with the hit symbol just arbitrarily, because I am trying to find a connection between these in the same spirit as we applied to '507, through components B3, E2B, to G1B.

Q I am sorry. You are going a bit too fast for me, sir.

A I am sorry.

There is a connection between the devices labeled B3 in the hit symbol, the 9316 counter, the vertical motion counter, from E2B, 7410, just below it -- E2B.

Q Oh, yes.

A 7410. Through G1B, which is a 7402. And that connects up to G3D. That is the coincidence. That is the line which detects coincidence.

Following that line out from G3D we go through H3B, which is the 7474, the D-type flip-flop.

That provides the controlling inputs to the H4B, H4D and H4C, which generate the sixth control.

Have you found that?

Q Yes. I have found that.

A Similarly, there is a coupling between the means for the control signals, for the hitting symbol, the output of G2C, which passes through G3D and through the same chain, and in an analogous manner there is a coupling between the means for generating first and second control signals and the fifth and sixth control signals by virtue of the path through B to G and B to C.

That provides the clock pulse which activates the D-type flip-flops, and their outputs feed to B4, which is the means for generating the fifth control signal.

Q Now, sir, the fifth control signal is the B3 counter?

A Preset.

Q I am sorry?

A That is the preset.

Q That is the 9316 unit?

A The preset to the 9316.

Q All right, sir. Is it generally true that the outputs of these kinds of devices are shown on the right-hand side of the block and the inputs are shown on the left-hand side of the block?

A That depends on the draftsman, but I suppose that could be viewed as a convention.

Q Is that convention observed in this drawing?

A Yes.

Q Now, if I look on the left-hand side of the block I see a number of wires coming in there, and I make it to be seven.

A Coming in to where? Are you talking about the left side of 9316?

Q The left side, the 9316 unit.

A That is correct.

Q So those are the inputs to that unit, aren't they?

A Well, let's see. There is a reset there. There is a clock pulse, and there is a logical CEP, which determines whether the counter will operate in parallel or triple count mode. So that includes preset inputs and some logical control functions.

Q Those are the inputs to that unit, aren't they?

MR. ANDERSON: Mr. Goldenberg, which unit are you looking at now, may I ask?

MR. GOLDENBERG: This is the B3 unit.

MR. ANDERSON: The 9316?

MR. GOLDENBERG: Yes, sir.

THE COURT: Will you point it out for me?

I have lost you, too. Point out where I am.

(There was a brief interruption,
after which the following further
proceedings were had herein:)

THE COURT: Well, I have been in the wrong part of it.

BY MR. GOLDENBERG:

Q Now, can you trace how the first, second, third and fourth control signals become inputs to that B3, 9316 unit?

A Yes. The first, second, third and fourth are the controlling voltages which determine the vertical and horizontal position of the paddles. They appear as outputs on G2C and G2A, after passing through the 7493 and the logical devices -- that is, there is a coupling between them -- and passing through G3D and G3A into B2C, the output of the B2C providing the clock input to A5B, A5A, and B5A, and those pass through

and become -- well, those provide the control signal -- excuse me. The output of B4 is the first control signal. Similarly I can show --

Q Can we back up for a moment? The input to B2C is the output of the hit/hitting coincidence gates, is that not correct?

A That is correct.

Ribbens - cross

Q The G3A and the G3D?

A Yes.

Q Are you telling me that the output of the hit coincidence detector is the same as the first, second, third and fourth control signals which control the horizontal and vertical position of the paddles?

A No, I am not. The issue that I am addressing myself to at the moment is the coupling between them. You asked me to trace the coupling between those signals.

Q If one signal is coupled from one electrical circuit to another electrical circuit, do I take it that that means to you not that that signal appears or is used in the second electrical circuit, but any manifestation --

A But it is used, because these control signals determine the time of occurrence. It is used. You are trying to suggest that the time interval is not preserved and that the control input which begins with the position of left paddle pot and right paddle pot isn't preserved in the timing which determines the time of occurrence of these signals relative to the synchronizing pulses. Is that your question?

Q No, sir. My question is this: Here is an electrical signal --

A Yes.

Ribbens - cross

Q It exists in a certain form in one electrical circuit.

A That is correct.

Q I couple it to a second electrical circuit.

A Right. By an electrical connection. I can trace a path between it.

Q And you are saying that is what happens here?

A What I am saying here is that you have asked me to trace a coupling, an electrical connection, between one circuit point and another. I have done so. Not only have I done that, but I point out to you that the influence of those control signals, which is to determine the time of occurrence of signals, is preserved. If I make a change in either of the vertical or horizontal control signal inputs, I would change the time delay.

Q Is it really your testimony, then, that it is not the control signals that are coupled in this device, but their influence that is coupled?

A I think it is both. In other words, I can trace an electrical path. That is what coupling means, to trace an electrical path.

Are you asking me if there is an significance to that coupling, to paraphrase your question? The significance of that coupling is that the time intervals

Ribbens - cross

upon which the operation of the device is based is maintained.

THE COURT: Can you conceive of the device working so as to cause time intervals, and still maintaining the identity of that original voltage which is coupled?

THE WITNESS: Yes. That could be done as well. You are talking about with reference to this specific circuit?

THE COURT: No. With respect to any such game.

THE WITNESS: Oh, yes. Well, with respect to any such instrument in general it is possible. Yes, it is possible.

THE COURT: But in either the '507 or Paddle Ball, as far as we have seen them drawn here, is it done that way?

THE WITNESS: That is correct.

THE COURT: I guess '598 is what I mean.

THE WITNESS: Right. That is where we are.

BY MR. GOLDENBERG:

Q Dr. Ribbens, do you recall being asked a series of questions from Mr. Anderson about the prior art which the defendants cited in that case?

A Yes.

Ribbens - cross

Q Did you study that prior art, sir?

A Yes. I have looked at it.

Q Did you study the patents referred to in the Patent Office record, the applications for the patents in suit?

A Those references cited, you mean?

Q Yes.

A Yes, I did.

Q Is one of the prior art patents that you studied U. S. Patent 3,728,480?

A Yes, it is.

Q Do you have a copy of that patent available to you?

A I do.

THE COURT: Which one is it?

THE WITNESS: The '480 patent.

MR. GOLDENBERG: This is tab 4 in our Exhibit 9.

THE COURT: I have it here.

BY MR. GOLDENBERG:

Q Does that teach the interactive play of a game using a TV receiver?

A I wouldn't call it interactive. Your definition might be. It teaches -- let me see if I can phrase what I believe it teaches. I believe it teaches the display on a television receiver of symbols which are under player control. To the extent that an interactive game can be made from a pair of symbols and a pair of control, if you use that definition of "interactive", then I would agree.

Q What do you mean by "interactive," sir?

A Well, by "interactive", as, for example, taught by '507, I mean the inclusion of an additional symbol which is under the influence of game electronics or device electronics, the instrument electronics.

Q Do you mean by that the introduction of a symbol where one of the symbols is not under the influence of

the player but is, rather, under the influence of some electronic circuit independent of the player?

A No. I was imprecise in that. I guess it is better for me to try to state what I believe '480 teaches than to use your terminology.

Q No, sir. There may come a time for you to do that, but at the moment I would prefer that you answer my questions.

A No, I don't believe that that is the teaching of -- well, could I have the question back? I want to make sure I am answering the right question.

Q My question to you is does it teach the interactive play of a game using a TV receiver?

A Yes, under the qualification of "interactive" as being a pair of player-manipulated spots.

Q Well, as a matter of fact it discloses and teaches a chase game, does it not?

A That's correct.

Q Where one player catches up with another player, you have a circuit --

A Yes, it does teach that.

Q -- to detect coincidence?

A Yes.

Q And the guy who is caught, his spot or symbol disappears from the screen?

A That's correct.

Q That is interactive, isn't it?

A Well, call it interactive.

Q Does it embody the use of synchronizing pulses and timed information for displaying symbols?

A Yes, it does.

Q And those things together permit interactive play between one or more players on the television set?

A They permit limited interactive play, yes.

Q Well, then, sir, can you tell me the difference between the '507 patent and the '480 patent?

A There is nothing in the '480 patent which teaches the possibility of playing a game, such as ping-pong, for example, in which we have a game-controlled spot, the objective of the game being for either of the player-manipulated spots to achieve coincidence and to alter the motion of this electronically moving spot.

Q Is there anything in the '480 patent which teaches the use of an electronically moving spot?

A Yes. I believe there is. A shooting game.

Q Would you point that out to us, sir?

A Well, let's see.

Q I don't know whether this is what you have in mind, but I direct your attention to column 12.

A Column 12?

Q Toward the bottom of that column?

A Yes. Beginning with line 57, for example:

"... target shooting game is yet another game which is applicable to this invention."

Q Could you read the balance of that paragraph?

A "One player can manually move a 'dot' while another tries to 'hit' the 'dot' with the photo-cell gun."

You want me to read the balance of the paragraph?

Q Yes.

A "Alternatively, the target may be automatically moved by, for example, driving the biasing voltage for the delay and pulse forming circuit in a dot generator with a variable voltage source."

Did you want me to continue?

Q No. Isn't that what is done in the '507 patent?

A Isn't what done? There are elements of that which appear in '507.

Q Isn't a spot moved by providing a biasing delay of a variable voltage source?

A That is one of the possible options of '507. We have '598 --

Q Let's talk about '507. Isn't that what the slicer circuit is?

A The slicer circuit is a device which provides a variable time delay to the output.

Q I understand. And the effect of that time delay is to cause a spot to move, isn't it?

A If the control voltage changes, then the spot will move, correct.

Q So it is a variable voltage source that provides a time delay to cause a spot to move.

A Right.

Q And that possibility is disclosed in the '480 patent, isn't it?

A That is correct.

Q Isn't the same thing in a slightly different form done in the '598 patent?

A Isn't what same thing done? The possibility --

Q -- of having a time delay provided by a variable voltage source.

A That is correct.

Q To move a spot.

A That's correct.

Q That is the same thing again, isn't it?

A That's correct.

Q In one case it is a sawtooth wave, and in the other case it is a square wave?

A The starting point in the schematic for the slicing circuit consists of a sawtooth wave and a variable control

voltage. In '598 there is a circuit which is introduced which is a direct variable time delay.

Q All right, sir. I would ask you to look at page 928 of the record, and perhaps you had best start with 927, with Mr. Anderson's question to you there.

A Yes.

Q Read over to the following page.

(There was a short interruption, after which the following further proceedings were had herein:)

THE WITNESS: All right.

BY MR. GOLDENBERG:

Q The essential answer you gave to that question by Mr. Anderson is on page 928, and you stated that you had studied the prior art and found no teachings in there which you would conclude teach the interactive play of a game using a TV receiver, in particular embodying --

MR. ANDERSON: Didn't you skip something?

THE WITNESS: I think you did.

MR. GOLDENBERG: " -- as taught by '507."

THE WITNESS: Yes. I think that is important.

MR. GOLDENBERG: I thought I was paraphrasing by the use of the word "essential."

MR. ANDERSON: I'm sorry for interrupting..

Ribbens - cross

BY MR. GOLDENBERG:

Q As taught by '507, in particular embodying the use of synchronizing pulses and timed information for displaying symbols which would permit interactive play between one or more players on a television set.

A Yes.

Q In fact, all of those things are in the '480 patent.

A No. That is not true.

Q What isn't? You just answered a moment ago that they were..

A No, I didn't.

Q I thought you did.

A No. The qualification that appears in that statement is that it is "as taught by '507."

Q I see.

A In '507 we teach the interactive play between player-controlled spots which are identified as having spots very specifically, and a movable spot under electronic game control, which is a hit spot, and whose motion is altered in response to the coincidence between those two spots.

Q So that what you read there, sir, in terms of specific elements as you stated them in answer to that question, that is not the invention of the '507 patent; that is merely a statement to the prior art, isn't it?

A What things are? I don't believe I know exactly what part of that paragraph you are referring to.

Q Let's do it again. Interactive play of a game on a TV receiver.

A As taught by '507.

Q That is in the '480 patent, broadly stated.

A Only with your qualification for interactive play.

Q I don't have a qualification, sir. If you don't think it is interactive play, for goodness sakes say so.

A I don't think it is interactive play in the sense as taught by '507.

Q But is it interactive play in any sense?

A In the broadest sense.

THE COURT: Where does the term "interactive play" originate in this litigation?

MR. GOLDENBERG: I don't know, sir. It may be in the patents. I can't tell you at this moment.

THE COURT: That is what I am wondering. Is that phrase used in the patents anywhere?

THE WITNESS: I think where or not it is, the patents themselves are very specific with respect to what classes of games they are teaching.

THE COURT: But we are using the word "interactive" as though it has a meaning in connection with this suit, and if it used someplace, I would like to know where and the sense in which it was used at that place.

THE WITNESS: All right.

THE COURT: I don't recall seeing the word in any of the claims, for instance, that we have studied.

MR. GOLDENBERG: Your Honor, it is not in the claims, to my knowledge, nor do I believe that it is in any of the text of either the '507 or '598 patents.

If I am wrong, I would certainly like Mr. Anderson to correct me.

MR. ANDERSON: I am reasonably certain it is not in any of the claims, your Honor. I don't recall seeing it in the specifications, but I haven't checked it for that at any time.

THE COURT: All right, go ahead, Mr. Goldenberg.

BY MR. GOLDENBERG:

Q Sir, on this matter of interactive, I would like to direct your attention to testimony beginning at page 770 -- and I will give you that in just a moment -- where, in response to a question about the inventive contribution of the '507 patent, on page 771, you said this:

" -- but with respect to the term 'interactive' I am implying that there are symbols whose positions can be controlled by players,

"and I think we had evidence of that in this Exhibit 89, which was a reconstruction of Figure 12A of '507, and in that figure the possibility of controlling the position of symbols on the screen of a television receiver was demonstrated by virtue of the generation of pulses whose position in relationship to the synchronizing pulse can be changed by virtue of controlling the time interval from the synchronizing pulse to the symbol.

The game is interactive because there is also a spot which moves under the influence of electrical signals in the package and which can also detect coincidence between the symbols under player control and this movable game spot, the conditions of the electronics being changed in response to that coincidence.

In that sense I believe it's interactive, because if one or more players -- typically two in the examples we have given, though it's certainly not fundamentally limited to two -- but the two players are playing one against the other in an attempt to control the motion of the game spot in accordance with a set of rules for the game."

Now, do you recall-- well, I wouldn't

expect you to recall that answer in its detail.

A Well, it sounds right.

Q Do you recall that, sir?

A Yes.

Q Wouldn't you agree with me that the game played in the '480 patent is interactive, as you have described it there, except for perhaps one thing where you might want to give some special meaning about controlling motion of the game spot, as you said on page 772?

A Yes.

Q Otherwise, that is the '480 patent, isn't it?

A No, I don't believe that it is the '480 patent. I think the '480 patent teaches a basic concept of being able to display symbols on a screen which are under player control, and it also teaches the display of a spot which is under electronic influence; but I don't believe it goes on to the point of teaching an interactive play of a pair of participants, such as would be possible in simulating a ping-pong game or a handball game.

Q But it does teach a form of interactive play?

A In a broad sense, it does.

Q In your study of the prior art, were you provided with an opportunity to study a pool game played on a cathode ray tube at the University of Michigan in

1954?

A Yes, I was.

Q Could you describe to the Court your understanding of that game?

A Yes, my understanding was that that was a demonstration of the capability of a computer which was built at Michigan, and as such, they used a cathode ray tube, an oscilloscope, to display a number of symbols on the screen of the oscilloscope.

By altering the motion of those spots in accordance with a calculation of an algorithm for the collision between spots, they could simulate the playing of a pool game.

So they would have one symbol that would represent a cue ball, and upon activation by a push button on the outside, they would simulate the motion of that cue ball in such a way as to bring coincidence with a group of balls, which are in a rack. Then following that, there is a series of calculations, using the laws of physics for elastic collision, and there is also some equations included for providing the frictional effect to slow down the motion of the balls.

Then following the calculation of the motion of these balls with the computer solving the equations of motion from physics, there is a display instrument,

an oscilloscope in this case, which displays the position of the spots and the sequence of steps; that is, one frame after another displaying the different positions of the spots.

Ribbens - cross

Q What is a cathode ray tube?

A I think we have talked about a cathode ray tube as a general class of vacuum tubes in which a beam of electrons can be focused on a screen and can be deflected.

Q A television tube is a cathode ray tube?

A It is one class of a cathode ray tube, that is correct.

Q This Michigan pool game, did you understand that it displayed a total of 16 balls, 15 pool balls and one cue ball?

A Yes.

Q Did you understand, sir, that the cue ball could be aimed in the manner of a real pool game?

A Yes, as I recall, there was a display of a line on the screen which was intended to simulate the pool cue. The direction of that line indicated the direction of travel of the cue ball after the button was pushed.

Q When the cue ball was set in motion, did you understand that if it hit another ball, the balls would bounce off from each other?

A That is correct, in accordance with the equations of motions of elastic collisions.

Q These are accepted equations that all people in the scientific and technical community accept, is that

not correct?

A They are well known laws of physics.

Q Did you understand that there was a means for indicating a pocket, a pool table pocket, on the screen of the cathode ray tube?

A I believe that was done with a grease pencil. I believe that someone previously arranged a mark on the face of the cathode ray tube as the boundaries of the game, and if he was successful in locating that grease pencil, then that would provide the representation of a pool table boundary with pockets.

Q With pockets?

A Yes.

Q Do you have any reason to believe he wasn't successful?

A No, I don't.

Q Did you understand that when a ball entered a pocket, it would disappear from the field of play in the manner of a pool game?

A Yes, that is correct.

Q Did you understand, sir, that when a ball bounced off the side of the table, as marked on with this grease pencil, it would bounce back into the field of play?

A That is correct.

Ribbens - cross

Q And that its angle of reflection was equal to its angle of incidence?

A Yes, I believe the collision was modeled as an elastic collision, in which case the angle of incidence would equal the angle of reflection.

Q Did you have an opportunity to become familiar with another pool game played at the RCA Laboratories in Princeton, New Jersey?

A Yes.

Q In 1967?

A Right.

Q Could you state your understanding of that, sir?

A Yes, that was a similar game using a cathode ray tube display similar to the Michigan pool; that is, in that the motion of the symbols were determined by following the equations of motion of physics.

Q Once again, were there 15 balls including the cue ball?

A That is correct.

Q Is it your understanding that as distinguished from the Michigan pool game, in that case the sides of the pool table and the pockets were actually displayed and not marked on the tube by a grease pencil?

A Yes, that is correct.

Q Once again, could the cue ball be aimed?

A Yes, I believe it was aimed with a light pen, and depending upon what part of the cue ball you touched with the light pen when you activated the push button, you controlled its direction.

Q What would happen when one ball hit another ball?

A There would be collision. The balls would appear to bounce.

Q What would happen when a ball hit the side of the table?

A You would experience a -- I believe it was modeled as an elastic collision, the same as the Michigan pool.

Q So it would bounce off the side of the table?

A Yes.

Q With an angle of reflection equal to the angle of incidence?

A Yes.

Q What happened when a ball entered a pocket?

A As I recall reading the depositions, I believe it disappeared.

Q Do you know how the game was commenced?

A I would have difficulty recalling the exact

sequence, but I believe there was a button which caused the balls to be cued -- racked, I believe was the expression.

MR. GOLDENBERG: I think Mr. Anderson would agree with me that in the RCA pool game there wasn't a button. A spot on the screen was touched with a light pencil.

There was a button for racking in the Michigan pool game, however.

MR. ANDERSON: I don't recall how racking was accomplished.

THE WITNESS: I guess I don't remember the exact details either of that.

MR. GOLDENBERG: Your Honor, the record will show whatever it has to show in that respect.

THE COURT: All right.

BY MR. GOLDENBERG:

Q Have you had occasion to become familiar with a game called Space War?

A I have read descriptions of it, yes.

Q Could you state your understanding of that game, sir?

A Yes, I believe that the display on the cathode ray tube, the oscilloscope face, included rockets whose motion could be influenced by the players. The objective of these rockets was to launch missiles from one to the other, to attempt to essentially shoot the other player.

Q Can you agree with me, sir, that in the prior art then there were interactive games played on cathode ray tubes where a player could, by controlling one spot or symbol, influence the motion of another spot or symbol?

MR. ANDERSON: Your Honor, I object to the term "interactive" only because the Court has already questioned the term.

THE COURT: I think that each of these gentlemen means something different by it.

THE WITNESS: Yes, I would not call it interactive.

THE COURT: So they can go ahead ...

BY MR. GOLDENBERG:

Q Why wouldn't you call it interactive?

A I wouldn't call it interactive because the player only could initiate the motion. All of the motion of the balls was determined by equations of motion as being solved by a computer. So the player could hardly be considered a direct participant in the sense as taught by '507.

Q Sir, I would like to have your definition of interactive. I can give you what you said a moment ago, where you defined -- not a moment ago, but a day or so ago -- when you defined interactive, and if it is something other than that, I would appreciate it if you would state it.

A I think if you want to bring that back to me ...

THE COURT: Are you saying that the motion in one case is caused by the manual dexterity of a player; whereas in these other games, the motion was caused by his mental acuity with the computer, his knowledge of how to put the proper information into the computer?

THE WITNESS: See, the player wouldn't have to have any knowledge of the computer. In fact, it may not be. These devices were demonstrated

to some extent to a lay audience. So you would consider a typical player as being someone who would participate at the demonstration.

The skill in having the game played definitely comes in the ability to program the computer and to solve the equations of motion, but I still don't consider it interactive in the sense that I defined yesterday and in the sense as taught by '507.

THE COURT: Would a person who knew more about mathematics than another person be a better player, say, in Space War?

THE WITNESS: I don't believe so.

THE COURT: Again, I don't mean to interrupt. I am just trying to --

MR. GOLDENBERG: No, your Honor.

BY MR. GOLDENBERG:

Q Wouldn't it be true that in playing any one of these games, Space War, Michigan pool or RCA pool, that once the computer had been programmed to play the games, what was left was the manual dexterity of the players to play a good game or a bad game?

A I don't think he has much effect over the pool games as I have read them. It seems to me all he can do is point the direction of the cue stick or

pick a spot on the cue ball.

Q Isn't that what you do in a real pool game?

A Yes, but he still is not directly interacting with the play. All he can do is initiate the play. All of the play is being taken care of by the computer.

Q He is starting the play in motion by causing the cue ball to go in motion, isn't he?

A Yes, that's correct.

Q He is aiming the cue ball?

A That is correct.

Q These are elements of manual dexterity, are they not?

A Yes.

Q He is not required to understand how the computer works, is he?

A He is not required to understand the computer operation or the algorithm or anything.

Q Then, sir, can we have your statement of what you mean by interactive?

A Interactive, as taught by '507, involves player manipulated spots and a spot which is under game control, the objective being to provide coincidence between those symbols and to alter the motion of the game spot as a result of that coincidence.

Q What does interactive mean as contemplated by

your understanding of '598?

A It is a similar game to that extent because it is interactive involving one or more players, but there we can have the additional complexity of having a wall generator and a displayed fixed visible barrier from which the movable hit symbol can bounce.

Q But as far as interactive is concerned?

A As far as interactive is concerned, the player has control over his symbol; that is, a symbol on a screen is under direct player control and he can alter the motion of the movable symbol by causing coincidence to occur between them.

Q Can you agree with me that with the possible exception of altering motion, everything that you have described is in the '480 patent?

A No, no, the '480 doesn't really teach the possibility of playing a ping-pong game.

Q But you didn't say anything about a ping-pong game, if you recall.

A No, I was just thinking as I answered the question.

'480 teaches the display of symbols which are under player control.

Q On a television screen?

A On a television screen, that is correct.

Q Using the synchronizing --

A Using synchronizing information, absolutely right; the time delay from the synchronizing pulse from the time of occurrence is there.

Q And it teaches coincidence between player controlled spots, doesn't it?

A But it doesn't teach the alteration of the motion.

Q So that is the only thing it doesn't teach, is the alteration of the motion?

A The only thing it doesn't teach, you say?

Well, no, I don't agree with that.

It doesn't suggest, it doesn't teach the

playing of a game, for example, such as ping-pong.
There is another difference between the two patents.

In fact, all it does teach is the representation on the screen of symbols under player control or under electronic control.

Q But can you agree with me that the other three games we have discussed, Space War, Michigan pool and RCA pool, do teach altering of a motion, do they not?

A They solve the equations of motion for the balls, and to the extent that when the balls collide their motion is altered, they do teach that; but they are not teaching the concept of the alteration of motion of those balls as a result of a position of a player controlled spot, but only the interactions which would occur, such as would occur in a pool game.

It is not part of a pool game to move your hand or the cue stick to intercept the path of any of the balls. That is not considered part of the game.

Q But it is part of a pool game and it was part of the Michigan pool game and the RCA pool game that the player aimed the cue ball and set it into motion, did he not?

A That is all he did, was initiate the motion.

Q Can you answer yes or no? Didn't he aim the ball

and didn't he set it into motion?

A Yes, he did.

MR. GOLDENBERG: Your Honor, is this any time to break for lunch?

I can continue.

THE COURT: All right, I think what I would like to do is take just an hour for lunch today. So we will go until 1:00 and break until 2:00. Then I intend to run until 5:30 because I sense that again we are not moving with the progress I had hoped for.

(There was a brief interruption, after which the following further proceedings were had herein:)

THE COURT: If you are out of questions, we can come back at a quarter to two and break now, if you like.

MR. GOLDENBERG: Your Honor, I think I might prefer that.

THE COURT: All right, let's do it that way.

We will break now and come back at quarter to two.

MR. ANDERSON: Would it be appropriate to ask Mr. Goldenberg approximately how much more he has?

THE COURT: Remember what happened last time

you asked him that question.

Maybe you could just give a yes or no answer, Mr. Goldenberg.

MR. GOLDENBERG: Your Honor, I think we are within 15 minutes to a half an hour of finishing up.

THE COURT: That is good.

MR. ANDERSON: Thank you very much.

THE COURT: Then you will have your next witness here, Mr. Anderson?

MR. ANDERSON: Yes, we will.

THE COURT: All right, thank you.

(Whereupon a recess was taken to 1:45 p.m. of the same day, Monday, January 3, 1977.)